

Appl. No. 10/071,862
Dated 01/19/2005
Reply to Office Action of 10/21/2004

REMARKS

This paper is in response to the Office Action mailed on 10/21/2004. In the Office Action, claims 1-69 were made subject to a restriction requirement under 35 U.S.C. § 121. Reexamination and reconsideration in view of the amendments and the remarks made herein is respectfully requested.

Applicant has amended claims 1, 4-5, 14-15, 25-26, 39-40, 60, 63, and 69 by this response. Claim 70 has been added. No claim has been cancelled. Accordingly, claims 1-70 are now pending. Of the pending claims, claims 1, 6, 16, 27, 30, 33, 36, 41, 46, 51, 54, 57, 60, and 64 are independent claims.

Applicant believes that no new matter has been added by this response.

I) RESTRICTION REQUIREMENT

On page 2 of the Office Action, claims 1-69 were restricted under 35 U.S.C. 121 into ten (10) inventions as follows:

Invention I: Claims 1-5, drawn to a plurality of wiring levels each at a different grid density, classified in class 716, subclass 13.

Invention II: Claims 6-26 drawn to a partitioning, classified in class 716, subclass 7.

Invention III: Claims 27-29 drawn to routing with a graph, classified in class 716, subclass 12.

Invention IV: Claims 30-35 drawn to routing with nodes for positioning objects, classified in class 716, subclass 12.

Invention V: Claims 36-40 drawn to shifting nodes, classified in class 716, subclass 2.

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

Invention VI: Claims 41-50 drawn to routing within a volume, classified in class 716, subclass 12.

Invention VII: Claims 51-56 drawn to channel routing, classified in class 716, subclass 14.

Invention VIII: Claims 57-59 drawn to a plurality of routing algorithms, classified in class 716, subclass 12.

Invention IX: Claims 60-63 drawn to routing pitch based on design rule violations, classified in class 716, subclass 11.

Invention X: Claims 64-69 drawn to threads of multi-processing, classified in class 716, subclass 12.

Applicant respectfully traverses this restriction requirement.

In response to the Office Action, Applicant provisionally elects to go forward with claims 6-26 of Invention II as it includes the largest number of claims for which fees have been paid.

However, Applicant respectfully submits that invention II, invention V and invention IX may be misclassified.

Invention II of claims 6-26 is allegedly drawn to partitioning and classified in class 716, subclass 7. However, class 716, subclass 7 of Partitioning (e.g., functional block, ordering constraint) deals with "[s]ubject matter comprising means or steps for dividing the circuit design into a set of smaller subcircuits arranged in logical hierarchical structure".

6450P019

25

WEA/phs

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

[USPTO Classification Definitions, December 2002 Edition, page 716-3]. The partitioning in Claims 6-26 is not for the purpose of dividing the circuit design into a set of smaller subcircuits arranged in logical hierarchical structure. Applicant's partitioning is for the purpose of forming a multilevel routing grid 400 as is illustrated in Figure 4 and described in Applicant's specification in the last paragraph of page 10. [see Applicant's Figure 4 and Specification, page 10, line 19- page 11, line 2].

Invention V of claims 36-40 is allegedly drawn to shifting nodes and classified in class 716, subclass 2. However, class 716, subclass 2 of Optimization (e.g., redundancy, compaction) deals with "[s]ubject matter comprising means or steps for improving the layout of the designed circuit components as far as possible." [USPTO Classification Definitions, December 2002 Edition, page 716-2]. The alleged node shifting recited in independent claim 36 is a conditional statement (e.g., if - then statement). An actual shifting of nodes is not recited in claim 36. Furthermore, the recited conditional node shift is only used to define the location of shared X-Y positioning of the first plurality of common nodes and the second plurality of common nodes between different layers (Z axis) as well as the difference in X-Y positioning of the first plurality of uncommon nodes and the second plurality of common nodes between the different layers (Z axis).

Invention IX of claims 60-63 is allegedly drawn to routing pitch based on design rule violations and is classified in class 716, subclass 11. However, class 716, subclass 11 of Layout Editor (e.g., updating) deals with "[s]ubject matter comprising means or steps for revising or modifying the circuit layout

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

interactively by utilizing geographical representation such as icons or menus." [USPTO Classification Definitions, December 2002 Edition, page 716-3]. Claims 60-63 recite no such interactive layout editing using geographical representations.

Applicant respectfully submits that invention II, invention V and invention IX may better classified in class 716 under subclass 12 (Routing), subclass 13 (Global Routing), or subclass 14 (Detailed Routing).

For the foregoing reasons, Applicant respectfully request reconsideration of the classifications of invention II (claims 6-26), invention V (claims 36-40), and invention IX (claims 60-63). In the event the Examiner reclassifies these inventions, Applicant would appreciate an opportunity to revise its provisional election of invention by a telephone conference with the Examiner.

Regarding the restriction requirement, "[t]here are two criteria for a proper requirement for restriction between patentably distinct inventions: (A) The inventions must be independent (see MPEP § 802.01, § 806.04, § 808.01) or distinct as claimed (see MPEP § 806.05 -§ 806.05(i)); and (B) There must be a serious burden on the examiner if restriction is required (see MPEP § 803.02, § 806.04(a) -§ 806.04(i), § 808.01(a), and § 808.02). [MPEP § 803, 8th Ed., Rev. 2, page 800-4].

The Office Action alleged that the inventions are distinct. One reason provided by the Office Action as to why the inventions are distinct is because they "have acquired a separate status in the art as shown by their different classification". [Office Action, page 2, lines 25-26]. However, invention III (claims 27-29), invention IV (claims 30-

6450P019

27

WEA/phs

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

35), invention VI (claims 41-50), invention VIII (claims 57-59), and invention X (claims 64-69) are all classified with the same classification, class 716, subclass 12 (Routing). "Where [] the classification is the same and the field of search is the same and there is not clear indication of separate future classification and field of search, no reason exist for dividing among related inventions." [MPEP §808.02, 8th Edition, Rev. 2, page 800-48]. As these inventions are all classified the same, Applicant respectfully submits that restriction is not necessary for these inventions and claims.

Moreover, invention I and invention VII have been respectively classified in class 716 under subclasses 13 and 14. Subclass 13 (Global Routing) and subclass 14 (Detailed Routing) are indented under and therefore related to the more general subclass, subclass 12 (Routing).

In restricting the inventions, another reason provided by the Office Action as to why the inventions are distinct is because "the inventions have separate utility as identified above" in the restriction requirement. [Office Action, page 2, lines 24-25]. Applicant respectfully disagrees.

The utility of the inventions are all for "methods of routing an integrated circuit (IC) design" as recited in the preamble of each independent claim. As the claims all have the same utility, Applicant respectfully submits that restriction is not necessary.

Additionally, the Office Action has failed to show that there is a serious burden on the Examiner for restriction to be required. While there are 14 independent claims and now 70 claims total, requiring claims 1-69 to be restricted into 10 inventions is unreasonable given that their classifications may

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

all be in class 716 under the related subclasses of subclass 12 (Routing), subclass 13 (Global Routing), and subclass 14 (Detailed Routing). Moreover, for those inventions in the same class and subclass, the Office Action has failed to show that a different field of search is required.

In view of the foregoing remarks, Applicant respectfully request reconsideration of the restriction requirement.

II) SPECIFICATION AMENDMENTS

Applicant has amended three paragraphs in the specification.

Paragraph nos. [0025] and [0052] were amended to correct grammatical errors.

Paragraph no. [0054] was amended to correct a typographical error by changing "modes" to --more nodes--. This is consistent with the context of "nodes" used elsewhere in the same paragraph. Additionally, this is the only instance of the word "modes" found in the application as filed.

III) CLAIM AMENDMENTS

Applicant has amended claims 1, 4-5, 14-15, 25-26, 39-40, 60, 63, and 69 in the application.

Claim 1 has been amended to change the phrase "the objects" to --the plurality of objects-- by adding "plurality of" before a second instance of "objects" in order to clarify that it is more than one object.

Claims 4-5, 14-15, 25-26, and 39-40 have been amended to correct grammatical errors in the claims.

6450P019

29

WEA/phs

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

Claims 25-26 have been further amended to delete a reference to the "third layer" which is absent in independent claim 16.

Claim 60 has been broadened by replacing "less" with --different-- with respect to the first routing pitch and the second routing pitch.

Claim 63 depends from claim 60 and has been amended accordingly by replacing "less" with --different--.

Claim 69 has been amended to delete numbers "1)" and "2)" used within the body of the claim for clarification purposes.

No substantive examination of the claims has occurred. These amendments to claims 1, 4-5, 14-15, 25-26, 39-40, 60, 63, and 69 are not made for reasons related to patentability.

IV) NEW CLAIM

Applicant has added a new dependent claim, claim 70.

Claim 70 depends from independent claim 60.

Accordingly, claim 70 is to be classified with invention IX (claims 60-63).

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

CONCLUSION

Reconsideration of the restriction requirement is respectfully requested. A first substantive examination of the pending claims in the application and allowance of the claims at an early date is solicited.

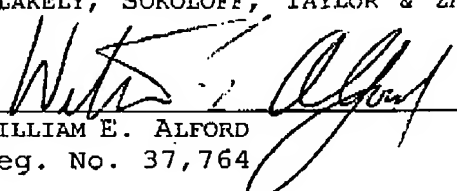
The Examiner is invited to contact Applicant's undersigned counsel by telephone at (714) 557-3800 to expedite the prosecution of this case should there be any unresolved matters remaining.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 02-2666 and please credit any excess fees to such deposit account.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

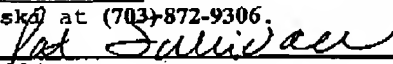
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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being transmitted via facsimile to the Patent and Trademark Office under 37 CFR §1.8 on: January 19, 2005 to Examiner Leigh Garbowski at (703) 872-9306.


Pat Sullivan 1/19/05

6450P019

31

WEA/phs